

WHAT IS CLAIMED IS:

1. A method for manufacturing a nonvolatile memory transistor, comprising the steps of:
forming a trench of a predetermined shape on a silicon substrate;
forming a N⁺ type doped region;
etching the silicon substrate;
forming ion implanted regions on the sides of the trench by conducting an inclined ion implantation for threshold voltage V_t control ion implantation of a select transistor;
forming a poly-1 layer by depositing an oxide film and then depositing poly-1 serving as a gate node of the select transistor;
conducting an etchback to the poly-1 layer; after the formation of the poly-1 layer,
forming N⁺ ion implanted regions by conducting a N-type ion implantation in order to form a N⁺ source junction of a cell transistor;
forming a channel of an EEPROM by additionally etching the silicon substrate;
forming cell threshold voltage ion implanted regions by conducting an ion implantation in order to control the threshold voltage V_t of the channel of the cell;
forming a cell gate oxide film by conducting the gate oxidation of the cell; after the cell threshold voltage ion implantation,
forming a poly-2 layer by depositing poly-2 and then conducting an etchback;
forming cell N-type drain junction regions by conducting an ion implantation in order to form a cell N-type drain junction;
etching the poly-2 layer into a predetermined shape in order to form a control gate of the cell overlapped with the poly-2;
forming a poly-3 layer by depositing an oxide film, depositing poly-3 and conducting an etchback; and
filling an oxide film so as to be penetrated into the poly-3 layer, the oxide film, the poly-2 layer, the cell gate oxide film, the poly-1 layer and the oxide film under the poly-1 layer.
2. The method of claim 1, wherein the etchback of the poly-1 layer is performed so that the etchback amount can be about one thirds of the thickness of the silicon etched surface.
3. The method of claim 1, wherein the etching of the silicon substrate is performed so that an etched region forms a right angle.